



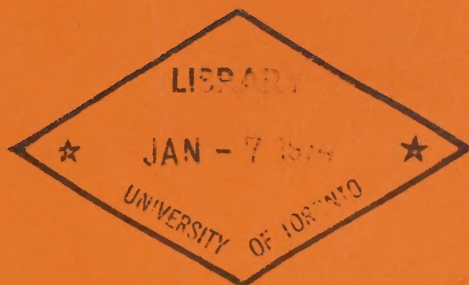
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# Reducing Cyclical Unemployment in the Construction Industry

Phase 1 Report:  
Feasibility of Forecasting



Ontario

A STUDY BEING CONDUCTED BY  
PETER BARNARD ASSOCIATES  
FOR

The Construction Industry  
Review Panel

General Publication

TORONTO  
SEPTEMBER, 1973

CG-1







Ontario

THE CONSTRUCTION INDUSTRY REVIEW PANEL

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## CONSTRUCTION INDUSTRY REVIEW PANEL

With this letter we are pleased to provide, for your review, a preliminary report on the feasibility of establishing a forecasting system for construction labour requirements in various regions of the province. The report, prepared by the consulting firm Peter Barnard Associates, represents the completion of the first phase of a five-phase approach to reducing unemployment in the industry.

Before presenting the findings and recommendations contained in the report, we should first like to review briefly the background and objectives of the study and the approach taken to this first phase.

### BACKGROUND AND OBJECTIVES

In the Fall of 1972, Labour Minister Hon. Fern Guindon appointed the Construction Industry Review Panel composed of eight representatives of labour and management from the construction industry, and the writer as Chairman and representative of the public interest. The Panel's terms of reference contain the following statement:

"The Panel will examine labour-management relations in the construction industry and will recommend to the Minister of Labour and the parties such measures as will contribute in the long run to their improvement, including means of achieving

- a) greater stability of employment,
- b) optimum levels of activity,
- c) appropriate sharing of the rewards of production,

and above all, optimum uninterrupted service to clients and the public."





In its early deliberations, the Panel concluded that the Ontario construction industry, including both management and labour, is concerned with the continuing problems of cyclical unemployment throughout the industry. Significantly reducing this cyclicity would not only result in improved labour relations, it would ultimately lower construction costs and provide the basis for improved planning by government and industry.

In an effort to overcome the problem, some of the major client groups have indicated a willingness to make their plans and forecasts of construction available to an independent agency if it can be used in developing a forecast of labour for each area of the province, and the information is used in confidence.

In developing these forecasts, the industry is concerned with the practical aspects, and is interested in an approach that is oriented to the actual plans and commitments of specific clients rather than the more macroscopic or theoretical approaches to forecasting. Against this background, we asked Peter Barnard Associates to carry out a study with the following phasing:

1. Determining the feasibility of forecasting demand and labour needs in various parts of the province and defining the regions for which forecasts could be prepared.
2. Developing the detailed forecasting approach including the survey procedures and forms to be used, lists of main clients in each region, factors for converting dollar forecasts into manpower needs by trade, form and staffing of the organization to administer the system.
3. Carrying out pilot projects in selected regions to test and refine the system.





4. Determining how cycles could be most effectively reduced using the information generated by the forecasting system together with other actions by industry and government.
5. Implementing the forecasting system throughout the province.

Given the pioneering nature of the study, the findings of each phase are to be reviewed and evaluated in detail before proceeding with the next phase.

#### THE APPROACH TO THIS PHASE

From the beginning it was clear that the development of a forecasting system would be complex and would require the participation of a large number of people to make it work. Also, there was some question whether useful forecasts could be developed and whether logical regions could be identified. Accordingly, we have had carried out an intensive interview program throughout the province to examine these questions.

Over the past three months, the study group has contacted representatives of major owner groups, building and construction trades councils, government agencies, and construction associations to:

- Understand the level of construction activity in the province, the breakdown by type and the fluctuations experienced over past years.
- Identify the major construction clients in the province.
- Determine current planning procedures by the main clients and their willingness to participate in the proposed forecasting system.





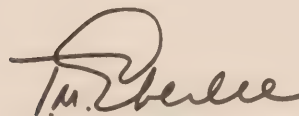
- Examine the logical labour market and construction areas, and review current government planning and administrative regions.

They have also talked with other organizations concerned with forecasting construction activity, manpower planning and construction industry statistics.

In total, our study team has interviewed over 150 people and organizations concerned with the industry in Ontario. Co-operation has been favourable, particularly from the large industries and from government.

The following is the report on Phase I of the study. We would welcome your views and comments which should be addressed to:

The Construction Industry Review Panel,  
5th Floor,  
Ontario Ministry of Labour,  
400 University Avenue,  
Toronto 2, Ontario.



T. M. Eberlee,  
Chairman.





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## SUMMARY OF CONCLUSIONS

On the basis of our analysis of construction activity in Ontario, review of present forecasting programs and extensive interviews with people and organizations involved in construction across the province, seven major conclusions have been drawn:

1. There are wide fluctuations in construction activity and employment in the province, particularly when viewed on a regional basis. Overall construction activity in Ontario has grown steadily over the past 15 years. Cycles become evident when spending is broken down into the major sectors of construction which typically require different types of labour. However, the true impact of cyclical investment is only evident when analysed on a regional basis where investment and employment levels can shift dramatically from year to year.
2. There is widespread concern about the problem of cyclicality and ready acknowledgement of the benefits that forecasting would provide to all participants in the construction industry. The seriousness of the problem is recognized throughout the industry and along with it a general awareness of the specific benefits that a good forecasting system would provide to each group. The only concern



encountered - expressed by only a few organizations interviewed - was that the information might be used by labour to restrict entry into the trades to enhance bargaining positions.

3. Despite a number of studies into related subjects, there is no program that would provide regional forecasts of labour requirements by trade. There are several surveys of construction activity carried out by the federal government or commercial organizations. There are also studies concerned with cyclicalities of construction and labour utilization. While many of these would provide useful information, none would satisfy the requirements of a regional labour forecasting system.
4. Forecasting regional construction activity by collecting client plans is generally feasible but the accuracy of plans and willingness to participate is lower for some sectors. The different nature and characteristics of each sector of the industry influences the extent to which they plan, their attitude to co-operation and their willingness to schedule to reduce cyclical unemployment. Thus, while in our judgement forecasting is generally feasible, the accuracy of plans and willingness to participate will be lower for some sectors, particularly housing.
  - Utilities, government, institutional and industrial construction: Forecasting is quite feasible for these sectors of the industry which account for about half of construction activity in the province. Three year, and in some instances longer term forecasts are prepared by almost all clients. The nature of decision-making, the size of most projects and the large expenditures





on repair of existing facilities mean that forecasts are relatively firm. Subject to some uncertainties about the exact timing of the start of some projects, forecasts based on clients' plans should be accurate. Clients in these sectors realize the benefits of regional forecasts and have expressed a willingness to co-operate with an agency set up for this purpose, provided that the information they supply is kept confidential. Also, there are relatively few clients in these groups and surveying them should not be difficult.

- Commercial: Forecasting for this sector, which accounts for about 10% of construction in the province, is subject to errors due to uncertainties about starting dates for projects. However, since most projects take two to three years to complete, once a project is started, forecasts of activity are accurate over that period. Large owners such as retail and hotel chains, have multi-year plans but rely largely on developers for finding sites and carrying out construction. Land assembly, zoning, financing and other constraints, create uncertainties for this latter group. Owners and larger developers have indicated some willingness to co-operate, but express reservations about the confidentiality of their plans and the benefits of regional forecasts to them.
- Housing: This sector accounts for about 40% of construction but forecasts based on company plans will be incomplete and subject to error. While large





developers have multi-year plans, their realization is influenced by many factors subject to change from one year to the next. Also, the bulk of activity in this sector is carried on by small builders who, by and large, do not plan more than one year in advance. In housing, forecasts based on plans would have to be supplemented with more analytical approaches taking into account population, land supply and other factors affecting production. This work should be co-ordinated with other studies currently being conducted into housing problems in Ontario.

5. Clients' plans can be converted into labour needs by trade. Few clients prepare forecasts of their construction labour needs, most forecasting only in dollar or square foot terms. Thus conversion factors will be needed to transform client plans into forecasts of labour needs. Little research has been done in this area, although the Department of Manpower and Immigration in Ottawa has developed some factors for road construction. In the initial instances, the accuracy of conversion factors will not be high, but any agency established to prepare forecasts in Ontario should have the capability of reviewing past forecasts and refining the conversion factors needed.
6. The public sector which could be influenced to reschedule on the basis of forecasts, controls enough construction to affect cycles: Government clients are the ones most likely to use the forecasts in scheduling construction activity. Other clients would be unlikely to change their plans unless there were incentives. Nevertheless since



the public sector accounts for about 40% of the total construction they would be in a position to relieve some cyclicalities through rescheduling. Also, while the private sector may resist pressure to reschedule, there are indications that some of the larger clients are sensitive to labour conditions and try to schedule their activities to avoid tight labour markets. Forecasts would clearly be influential in the planning of these companies.

7. The Province should be divided into nine regions for forecasting purposes: From our studies of the normal labour and construction market areas across the province and considering other regional boundaries related to the construction industry, we recommend the establishment of nine forecasting regions. These regions would be similar to the provincial government's planning regions for the northern and eastern parts of the province, with greater subdivision of the central and western areas.





## 1. CYCLICALITY IN PERSPECTIVE

Changes in construction expenditure have traditionally resulted in the construction industry experiencing periods of rapid expansion followed by periods of either stagnation or decline. These cycles and their impact on demand for labour are pronounced on an overall basis, but are particularly serious when viewed in the context of particular types of construction and specific regions of the province.

To put the problem of cyclicalities into proper perspective and provide a background for our discussion of the feasibility of forecasting construction activity in various regions of the province, this first chapter will,

- A. Review the size and makeup of the Ontario construction industry and the importance of government spending.
- B. Examine the nature and extent of cyclicalities in the industry.
- C. Outline the potential benefits of forecasting.
- D. Evaluate present forecasting activities and related studies in terms of their suitability for regional labour forecasting.

Five Main Sectors of the Ontario Construction Industry \$6.23billion

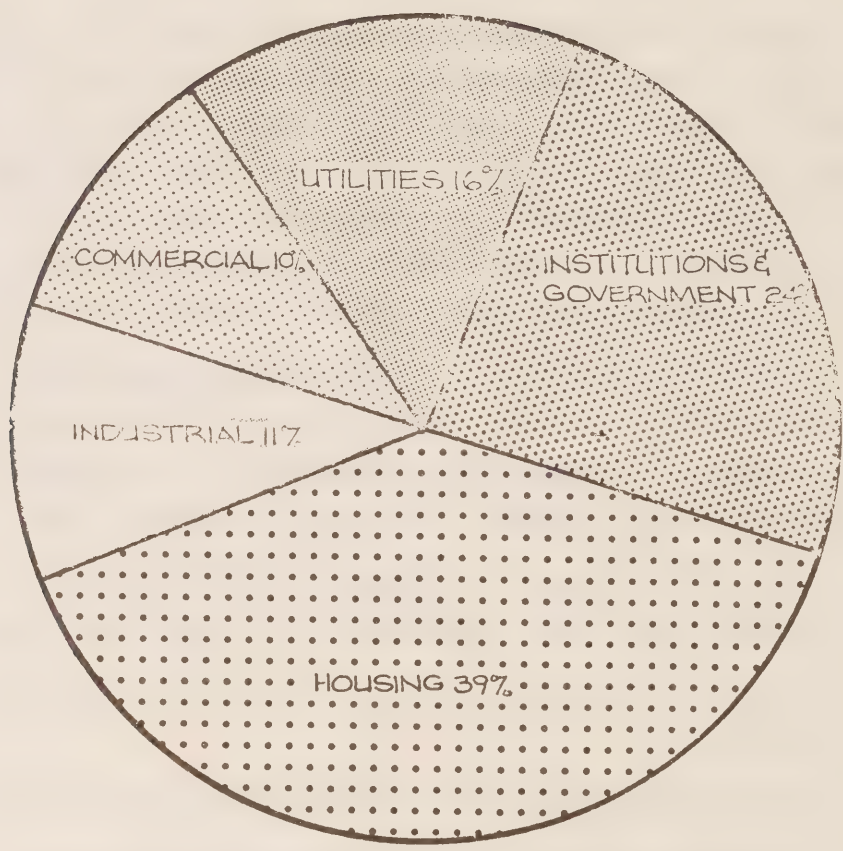


Exhibit 1.

## SECTORS OF THE INDUSTRY

In 1972 the \$ 6.23 billion Ontario construction industry accounted for 33% of all construction spending in Canada. Activity occurs in five main sectors - each characterized by its own clients and types of construction (see Exhibit 1). The sectors, and proportions of total construction expenditure are:

1. Industrial (11%) includes construction for both primary industry and manufacturing clients. Primary industry includes companies in mining, forestry, petroleum and gas, fishing and other related industries and includes mainly building and several forms of engineering construction. These clients of the construction industry tend to be large corporations with substantial construction investments. Manufacturing includes both large and small clients whose main needs are for building construction and other plant facilities. Clients include companies engaged in businesses such as food and beverages, pulp and paper products, primary metals, transportation and petroleum, coal and chemical products.
2. Commercial (10%) involves mostly building construction including wholesale, chain and department stores, shopping centres, office buildings and hotels. Clients in this sector are either large owner-builders or major developers.



Public Spending Accounts for a Large Portion of Construction Spending

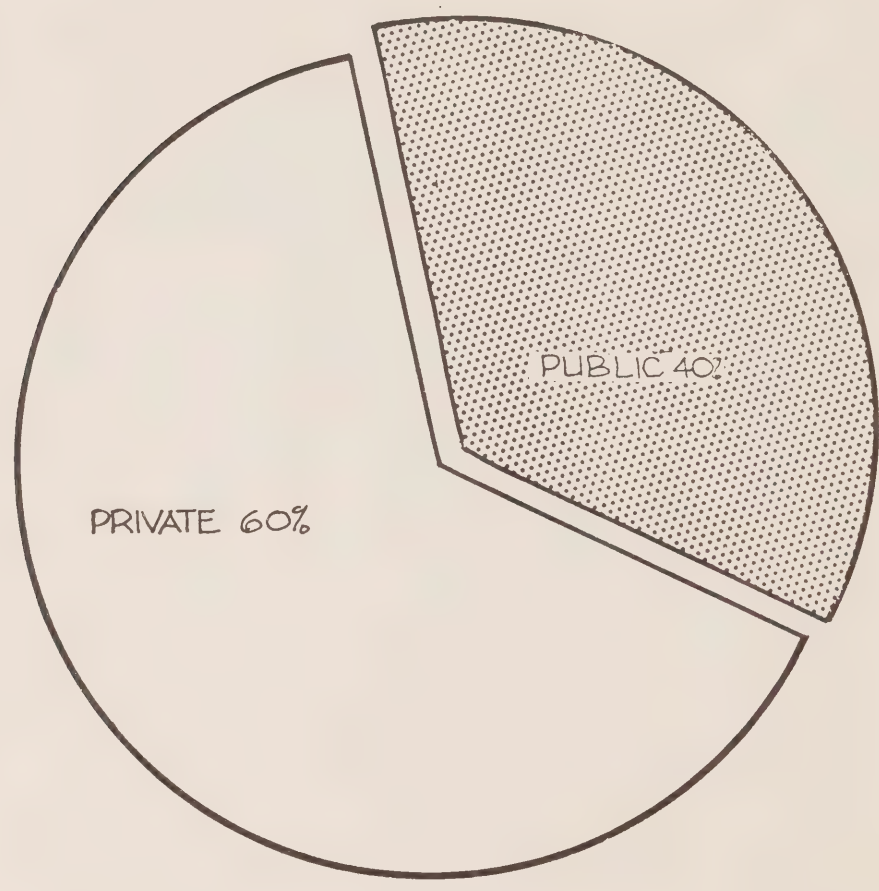


Exhibit 2.

3. Utilities (16%) includes many building types: electric power generating stations and transmission facilities; gas distribution systems and pipelines; railroad and urban transit systems, and telephone and broadcast facilities. Major clients include crown corporations, such as Ontario Hydro, federal agencies and a few large private companies.
4. Institutions and Government (24%) includes a variety of building types such as schools, hospitals, universities and government office buildings as well as engineering construction such as roads, municipal services and harbour facilities. Clients include all three levels of government.
5. Housing (39%) is the largest single sector in the Ontario construction industry. Basic building types include: single family dwellings, medium density, multiple-family units, and high-rise apartments. This sector has a large number of clients consisting mainly of small local builders but also including some large private developers and the provincial government.

Public spending by all levels of government and the full range of agencies and crown corporations is about 40% of total construction spending in Ontario. By sector, public clients are involved in institutional and government construction and in utilities and housing (see Exhibit 2).

## Provincial Construction Spending Conceals...

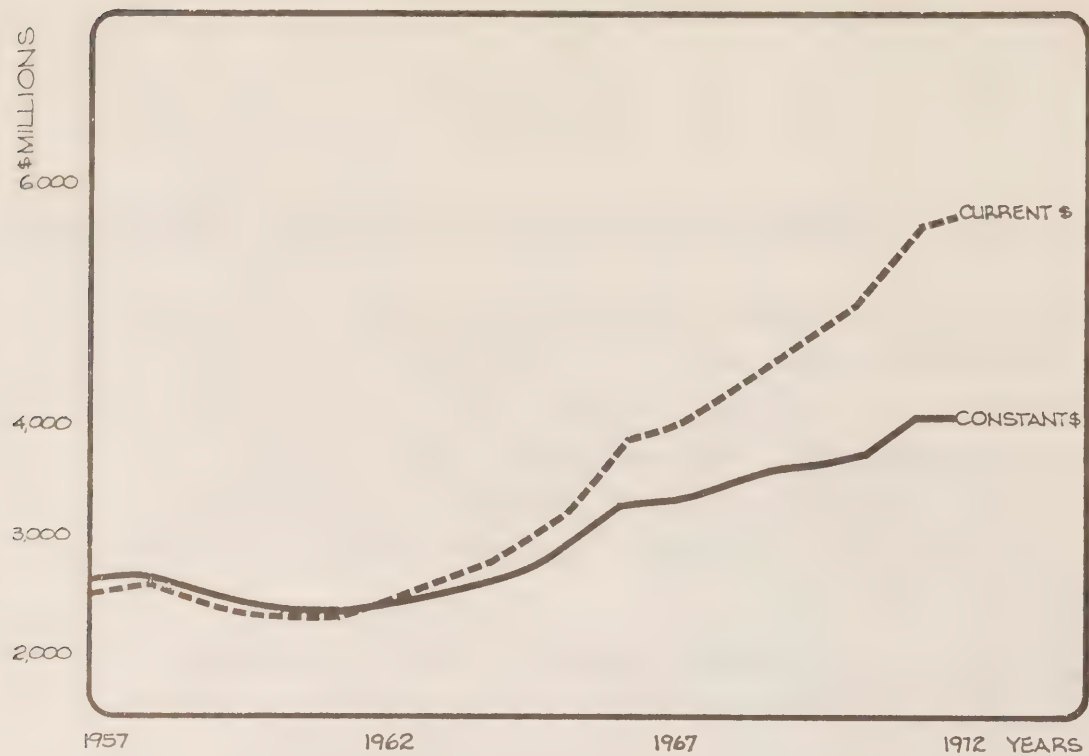


Exhibit 3.

## ...Major Cycles in Various Sectors...

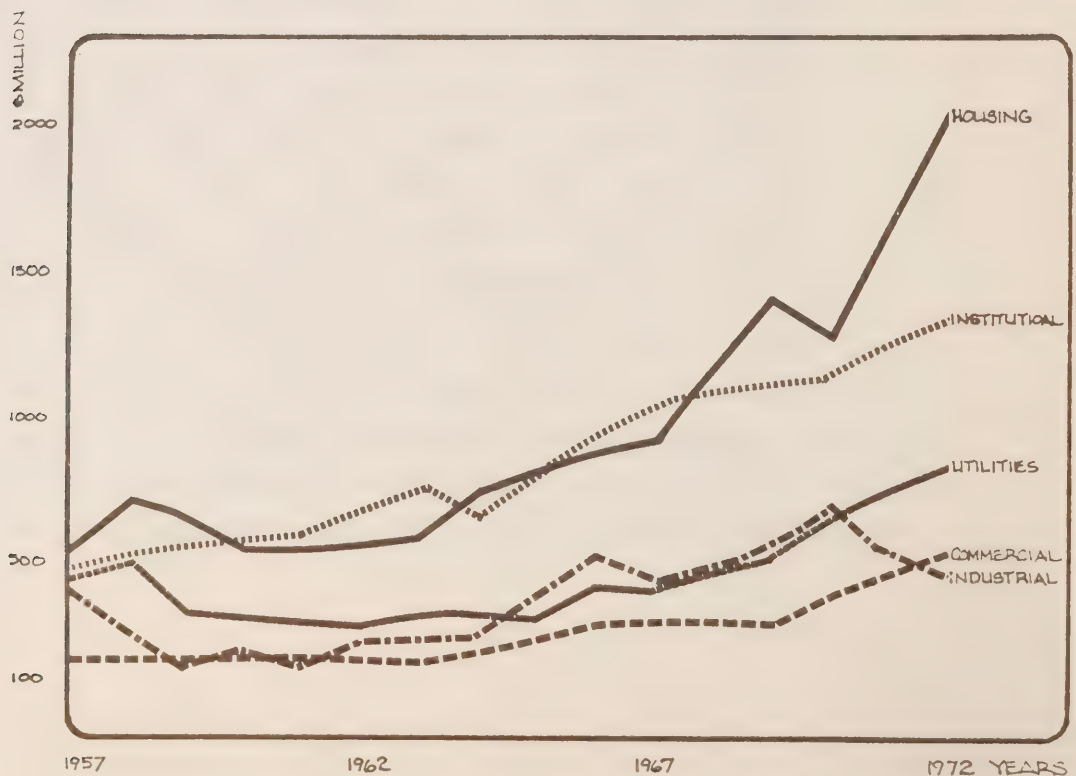


Exhibit 4.

Federal government departments invest about \$150 million in Ontario construction or about 10% of total government spending, while provincial departments and agencies account for \$1,870 million or about 75%. In fact three provincial agencies, Ontario Hydro and the Ministries of Transportation and Communications and Education - account for almost half of total public spending on construction in the province.

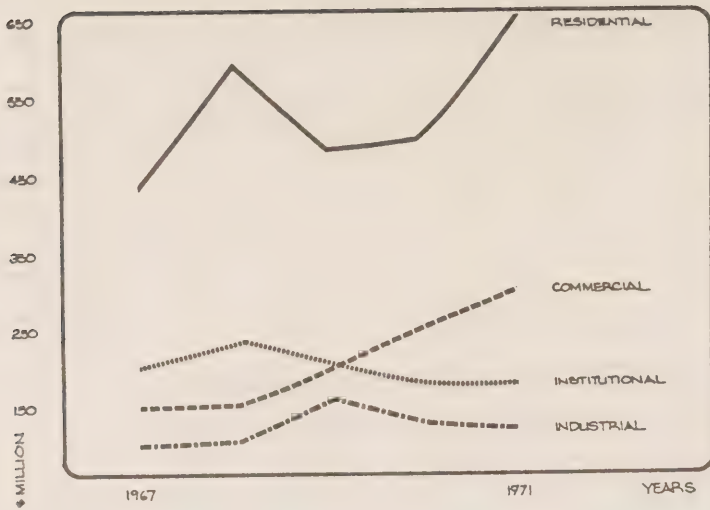
#### CYCLICAL NATURE OF CONSTRUCTION INVESTMENT

Historically, total construction spending has grown from \$2.5 billion in 1957 to \$6.2 billion in 1972. Real growth, in terms of constant 1961 dollars, has been from \$2.6 billion in 1957 to \$4.3 billion in 1972. Viewing construction spending at this level, there appears to be little cyclicity (see Exhibit 3).

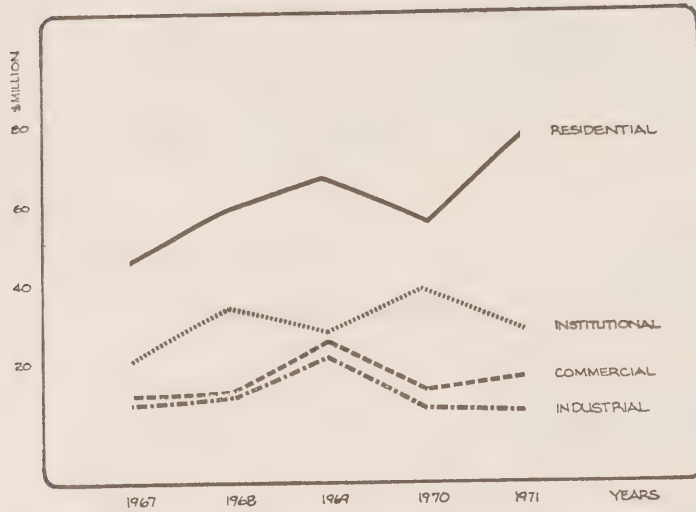
When total construction spending is broken down into the major sectors, cyclical changes become more evident. Major cyclical swings, some extending over several years, can be identified in almost every sector (see Exhibit 4). For example, over the past 10 years annual variations in province-wide investment have been as much as 52% in the industrial sector, 31% in commercial, 38% in utilities, 20% in government and institutions and 29% in housing.

However, the real impact of cyclical investment can be seen at the level of the various geographic sub-regions of the province where each sector has experienced major swings (see Exhibit 5). Even for the Metro Toronto region which

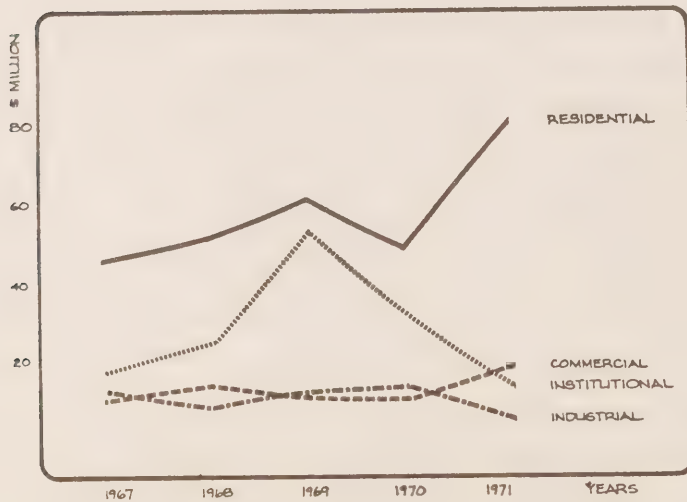




---And Larger Cycles  
in Individual Regions,  
such as Central Ontario---



---Lake St. Clair---



---and Lake Erie.

Exhibit 5.

Former Planning Regions



accounts for about 50% of construction in the province, changes from one year to the next have been as large as 50% of construction in some sectors. In some of the smaller regions with smaller industries the changes can be even greater, with 100% cycles being not uncommon.

While the above statistics are available only for investment, it is not difficult to conclude that construction employment in the various regions undergoes similar cycles. Actual employment changes by trade will vary from sector to sector, reflecting differences in construction scheduling and the manpower skills required.

#### POTENTIAL BENEFITS OF FORECASTS

Accurate advance knowledge of construction plans and cyclical changes could potentially benefit all parts of the construction industry.

- Owner-clients: Given good information on construction activity in defined areas, major owner-clients would be better able to estimate their construction labour costs. Clients could then assess the \$ benefits of rescheduling either the start of work or the phasing of construction.
- Labour: Advance construction data plans could permit the planned movement of skilled workers from regions with excess manpower to those with shortages. Estimates could detail the timing, number of men and the skills needed. Bargaining and labour-management relations should also improve.



- Contractors: Contractors will benefit to the extent that clients can reschedule to stabilize construction demand. Larger companies should find the forecasts helpful in preparing corporate plans. Smaller contractors could avoid difficult contract negotiations or high-cost overtime agreements which can quickly erode profitability. With more stable employment conditions, contract negotiations and labour-management relations should improve.
- Manufacturers: Since demand for materials and products also varies with construction expenditure, forecasts of construction activity would aid manufacturers and other suppliers of the industry in their planning, production and marketing efforts.
- Governments: Construction spending by government agencies has greater leverage than that of other sections in the industry because of the \$ volume and the difference in criteria for investment decisions. With an accurate forecast available, government construction expenditures could be timed for improved counter-cyclical fiscal operations. Overall construction costs could also be reduced.

Finally, while the benefits of forecasting are clear, some concerns have been expressed by persons interviewed by our study team, that advance knowledge of manpower demand might be used by labour to restrict entry into the trades and enhance bargaining positions.





## RELATED STUDIES

The sensitivity of the economy to changes in construction spending has stimulated a series of studies and surveys of construction activity. Thus an important step in the first phase has been to examine these activities in some depth to determine whether or not information is currently being collected that could be used for effective forecasting of labour on a regional basis. Our study revealed that a number of agencies are involved in important studies of construction activity. However, each study is oriented to solving a specific problem and, while most would provide useful data, none is suitable for regional labour forecasting. The characteristics of these studies and their limitations with respect to regional labour forecasting are as follows:

### 1. Capital Expenditure Forecasts

- Statistics Canada: S.C. forecasts national capital expenditures one year ahead, revising its forecast semi-annually. The study involves surveys of over 20,000 companies, government agencies and housing developers. The survey is carried out through questionnaires, with the typical rate of response about 75%. This national forecast is broken down into provincial segments. Construction (both capital and repair) and machinery and equipment costs are detailed.



Construction types are divided into four categories of building construction, and eight categories of engineering construction. Construction spending is broken down by client only at the national level.

This survey has many of the characteristics that would be useful to a forecasting system. However, there are three reasons why it cannot be adopted. First, data is not collected on a regional basis. Second, and most important, detailed breakdown at the provincial level would violate provisions of the Statistics Act, which guarantees the secrecy of the information. Finally, the survey is limited to intentions for only one year ahead.

- Department of Industry, Trade and Commerce: D.I.T.C.'s forecast of national capital expenditures is done for a five-year time frame, and is also revised semi-annually. Although only about 200 major companies are contacted, they account for about 60% of total business investment in Canada. The survey is conducted through direct client interviews, and all key companies are contacted. This forecast is strictly on gross investment, at the national level. No provincial or regional breakdowns are made. Similarly, no breakdown of investment by type of construction is done.

As with the Statistics Canada survey this would be unsuitable for forecasting labour because of its macro approach and also because it aggregates construction of all types.





## 2. Studies of Cyclical Changes

- Economic Council of Canada: The E.C.C. is now studying the causes of cyclical changes in the construction industry, at the national level. Relying strongly on Statistics Canada (historical) information, the focus of the study will be on determining the nature and causes of the major cyclical changes in construction investment in the past. The study will not examine provinces on an individual basis or breakdown construction spending by specific types. Because it is directed at national policy issues, detailed forecasts will not be produced for the provinces and as such will not generate data suitable for regional labour forecasts.

## 3. Labour/Manpower Studies

- Sarnia Construction Association: The S.C.A. is the one agency in the province which is currently forecasting regional construction activity. Since 1966, the major firms in the petro-chemical industry have been co-operating with the local unions and the contractors so as to co-ordinate their construction work. All firms are surveyed every three months, for their plans in the next year. A three-year survey is also conducted, but the longer range survey has lower accuracy. Detailed survey forms and procedures have been developed, so that construction tasks can be forecast in terms of manpower. Although this system



has been applied solely to the petro-chemical industry, it has been very successful in stabilizing construction employment levels in this industry.

This system deals directly with the problem of regional labour forecasting and serves as a model for a larger and more comprehensive system. Much of the development work and experience will be invaluable in designing a province-wide system.

- Department of Manpower and Immigration: Manpower is currently undertaking a study of the labour needs for 40 basic types of construction. The primary goal of this study is to develop factors which can convert \$ cost estimates for a given construction type, into manpower needs, by trade and over time. Currently, work is almost complete on conversion factors for road-building construction. Over the next year, factors for other building types will be established. When completed, the table of conversion factors will be supplied to all Canada Manpower Centres, to assist personnel in estimating labour requirements for work in progress. At this time, work on the conversion factors will not involve forecasting systems.

Again, while this work is not directly oriented to the forecasting system, an important requirement will be the conversion factors for construction expenditures for different types of construction into labour types. Thus the results of this study should be useful in the development of regional labour forecasts in Ontario.





#### 4. Surveys of Construction Work

- CanaData: CanaData is a private information service providing national construction information based on contract awards. Data is collected through a large number of personal interviews with architects, consulting engineers, contractors, owners and public officials. Detailed information on geographic location and physical parameters of construction projects is collected and collated for distribution through a computer system. Information can be requested on national, provincial and metropolitan summaries, which report on 30 construction classifications in five major categories. Canadata also compiles information on a construction cost index in the major regions of Canada, including Ontario.

Because CanaData relies on surveys of the contract award stage, about 50% of the put in place construction and 80% of the contract work is covered. Also, because of the use of contract award information, the data thus covers construction activity only for the following year. These surveys have clearly indicated the practicality of gathering information in construction plans. The present survey would not be suitable for regional labour forecasting.

- Department of Industry, Trade and Commerce: The Capital Expenditures Division of D.I.T.C. also compiles monthly data on "New Capital Expenditures Projects". Data is



collected for each province on new capital expenditure projects valued at \$1 million and over from press releases available to the Division. The report is based on the starting stage of a given project, and also provides available details on the duration of projects and the levels of employment they generate. From April, 1972, estimates of work put in place by quarters and tabulations of starts, by size of project by industry, were also added. By the nature of its sources this information is incomplete since it contains only announced construction projects. Also, it is primarily concerned with current projects and not with construction forecasts.

#### 5. Other Studies

There are a number of other organizations that have an interest in construction forecasting. At the federal level, the Construction Industry Development Foundation, affiliated with the Canadian Construction Association, has sponsored a conference on short and medium term forecasting. The Construction Industry Development Council, sponsored by the Department of Industry, Trade and Commerce has also examined cyclicalities of construction and was the initiator of the Economic Council's reference to instability in the industry. In Ontario two organizations have been particularly concerned with problems of the residential sector. The Ontario Housing Advisory Committee has been in existence for several years and has considered the industry's information needs, along with numerous other factors. The recently



appointed Task Force on Housing Policy is also considering related problems.

\* \* \* \* \*

Each of these surveys has been undertaken to solve or contribute to the solution of specific problems. Only one - the Sarnia Construction Association Survey - deals specifically with the type of forecasting needed to project labour requirements by type, and that of course is limited to the Sarnia area and a highly concentrated petro-chemical industry. The annual Statistics Canada expenditure forecast could be useful if information could be provided on a regional basis and the Department of Manpower's study on conversion factors could, when available next year, be helpful in improving the accuracy of any conversion factors developed as a part of this study.

The remaining studies, while providing useful background data, do not meet the requirements of a province-wide labour forecasting system.





## 2. FEASIBILITY OF FORECASTING

From the review of the industry and present forecasting activities, it is clear that cyclicalities are a serious problem particularly when viewed on a regional basis and that, despite numerous studies touching on the problem, none is concerned with forecasting the industry's labour needs in Ontario. Thus the main objective of this first phase has been to determine whether reliable forecasts of regional construction activity could be prepared by tapping into the plans of the industry's owner/clients.

In assessing feasibility it was recognized that all clients do not use the same approaches to planning nor do they have the same attitudes toward co-operation. Some clients, due to the nature of their business, prepare detailed reliable forecasts of their construction programs, while others do little formal forecasting and rely on rough guidelines or objectives which can bear little relationship to the construction actually carried out. Similarly for some client groups, disclosure of plans is of little significance whereas for others disclosure could give their competitors a distinct advantage. Given these conditions, it is clear that the perceived need for forecasts, the accuracy of data



and willingness to participate will vary among the sectors of the industry and among different types of clients.

Our approach to determining feasibility under these conditions has been to establish criteria for successful forecasting and then evaluate each sector of the industry against these criteria. This chapter will present the results of this evaluation for each of the industry's five sectors.

## CRITERIA

The feasibility of developing realistic regional labour forecasts depends on the extent to which clients in each sector meet four criteria:

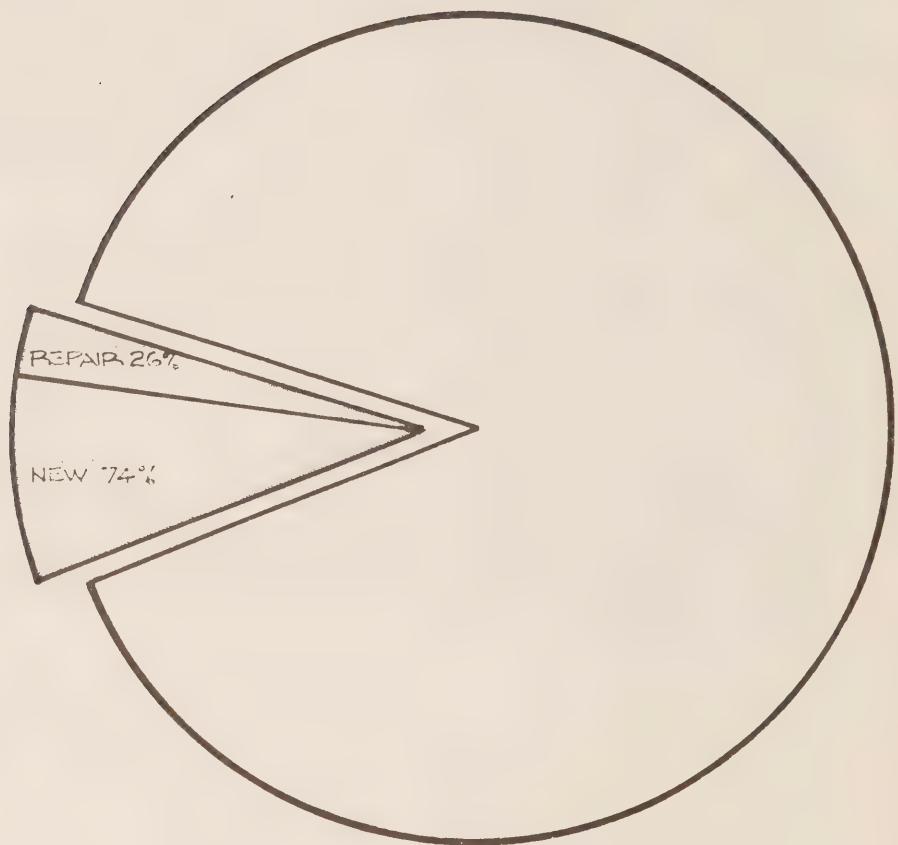
1. The availability of useful information: Here we examined the extent to which clients plan their construction activities and the level of detail with respect to types of building, location and scheduling of construction. We also reviewed the reliability of the plans and the conditions under which changes are made.
2. Willingness to participate and attitude: Not only must there be useful information available, clients must also be willing to co-operate. Thus an important criterion was an assessment of the major clients' willingness to provide plans to a responsible body committed to preserving the secrecy of the plans and the clients' attitudes concerning the benefits of regional labour forecasts to them.





3. Degree of concentration: To make the survey and analysis reasonably economical and to have the maximum effect on local labour markets, clients should be concentrated. That is, a relatively small number of clients control the bulk of construction in an area. This would reduce the number of contacts to be made during the survey and improve the likelihood that re-scheduling of construction activity would influence employment in the region.
4. Ability and willingness to re-schedule: Since the ultimate objective is to encourage clients to re-schedule construction to eliminate undesirable peaks and valleys in activity, there must be enough clients able and willing to re-schedule to make the exercise worthwhile. Accordingly, each sector was assessed as to the extent to which clients would be able or willing to re-schedule projects to take advantage of favourable labour markets.

**Industrial Construction \$650 million**



**Exhibit 6.**

In the following sections we first discuss the nature of each sector's clients, their typical construction work and the nature of their planning and budgeting procedures as a basis for reaching our conclusions on the feasibility of forecasting and potential for rescheduling projects.

## INDUSTRIAL CONSTRUCTION

This sector accounts for about \$650 million of construction in Ontario of which over a quarter is devoted to the repair of existing facilities (Exhibit 6). For clients in both primary industry and manufacturing, capital investment in plant facilities is normally large, with major expenditures for equipment. Once in operation, the plants tend to require a considerable amount of major maintenance work and periodic additions to plant capacity, both of which need construction labour.

### Clients

Typical clients in this sector fall into two categories: a few major corporations and numerous smaller manufacturers.

- Large Companies: In the case of the largest companies, construction follows very specific patterns. Plant improvement and expansion are major annual costs. Certain clients in this category have annual construction and repair budgets over \$50 million. New plant



facilities are carefully planned many years in advance, and the acquisition of equipment for plants may involve a 2 to 3 year lead time. Clients in this sector include such major corporations as: Abitibi, Falconbridge, Steel Company of Canada, International Nickel Company, Canada Cement Lafarge, Shell Oil and General Motors. Many clients in this sector are major employers in their local areas. Construction activity in cities such as Sudbury, Timmins, Sault Ste. Marie and Hamilton depends very much on the plans of these clients.

- Smaller Manufacturers: Beyond the major companies, there are a large number of manufacturers whose construction expenditures for both new plant and maintenance are significantly lower. These companies are far more dispersed, and can be associated with any population centre in the province. Cities such as Sarnia, Windsor, London, Toronto and Kingston incorporate many such industries. Although the individual plants operated by these clients may be large, most clients will build only at irregular intervals. Major increases in plant capacity or new installations may not be built for between five and ten years.

### Current Planning Practices

Planning throughout the primary industry and manufacturing sector is very advanced. Companies will generally plan capital construction at least three years into the future, and frequently between five and eight years. In this sector,





some of the larger clients even forecast construction needs in manpower skill terms for between three and five years into the future.

This type of planning is based on the complexity of decision-making for plant facilities in this sector. New plant capacity will only be created at times when market factors justify construction. Moreover, the equipment for many of the larger installations and site servicing will require order lead-times of up to three years before physical installation. In addition, plant facilities are frequently complex engineering and construction tasks which demand sophisticated scheduling.

Although all companies in this sector are sensitive to market conditions, the scale of their capital investment programs forces them to plan in greater detail than other sectors, and to make commitments to new facilities far in advance of on-site construction. Consequently, plans in this sector are generally firm.

### Conclusions

- Forecasting for this sector is feasible: Clients prepare their own construction forecasts, often in considerable detail. Those interviewed by our study team have indicated a willingness to co-operate by supplying their plans provided it is on a confidential basis. The factors



which require these companies to prepare detailed plans mean that their decisions are less subject to change than those in other sectors.

Several other factors will contribute to forecast reliability in this sector. For example, in large construction tasks lasting several years, spending commitments will be clearly visible at the start of the project for its entire life. Also, all clients must invest regularly in maintenance and repair. This spending tends to remain constant over time. Finally, clients in this sector are relatively concentrated. A few, large clients (including the steel companies) account for up to 25% of all spending. Within the various regions outside of Toronto, there will be a relatively small number of other manufacturers building in any one year.

- The potential for re-scheduling is low: When construction decisions are made, most clients have fully analyzed all market factors affecting their product line. They may have decided to build either because of, or in spite of, existing conditions in the local construction industry. For most, the critical factor is plant completion and start-up and not construction costs. For the larger clients, the scale and complexity of their construction work makes re-scheduling difficult. For the smaller clients, market factors at given points in time are critical and delays in starting construction will have definite opportunity costs in terms of sacrificed production. Thus forecasts of labour shortages (or surpluses) are unlikely by themselves to influence the scheduling of construction in this sector.

Commercial Construction \$610million

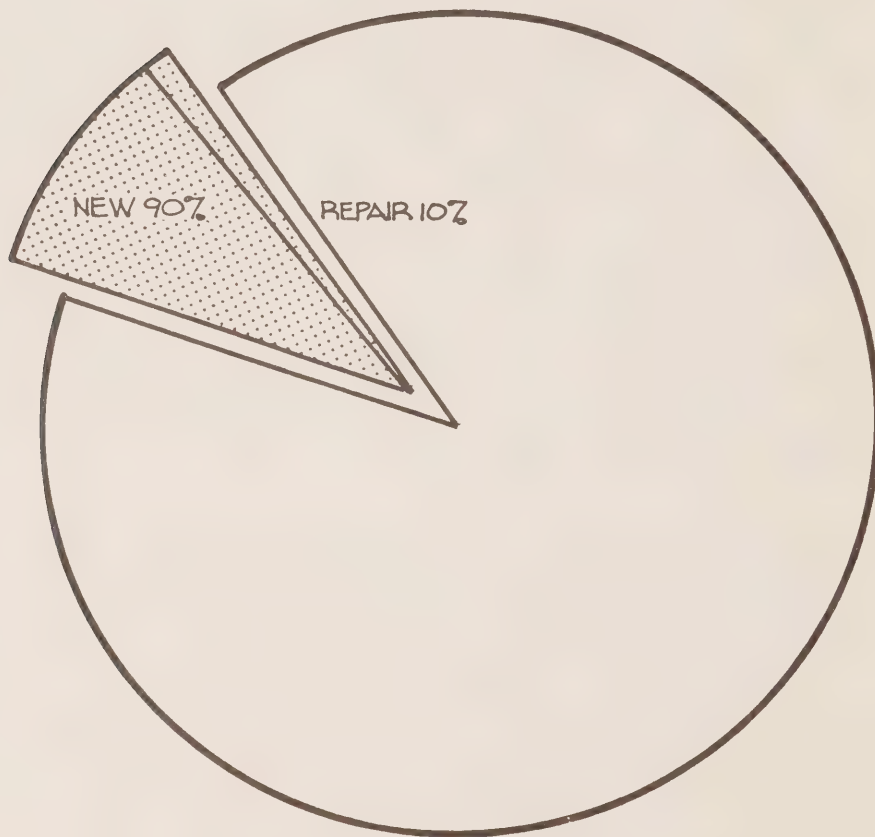


Exhibit 7.



## COMMERCIAL CONSTRUCTION

In 1972 this sector accounted for about the same investment in construction as the industrial sector. However, of the \$610 million, only about 10% was devoted to repair work (Exhibit 7). Investments in each project can range from small \$1 million office or motel buildings to large shopping or commercial complexes costing over \$200 million and taking many years to complete.

### Clients

There are two principal types of clients in this sector. The first is the large retail store or hotel chain, usually with many outlets in urban centres across the province. Companies like Eatons, Simpsons, Dominion Stores, Holiday Inns, and Loblaws fall into this category. The second type is the large developer; for example, Fairview, Olympia and York, Campeau and others who assemble land for office buildings, hotels and shopping centres and tend to concentrate their activity in one or two main centres.

There is often a close association between the developer and one or more of the retail or hotel chains in the planning and development of individual projects. The developer identifies a potential site and searches for major tenants in the proposed development. Most of the chain stores have abandoned constructing their own facilities in favour of lease-back arrangements with developers.



## Current Planning Practices

As in other sectors, generally the larger the scale of the project, the more detailed the pre-construction planning. Confronted by many of the same procedural obstacles as large housing developments, the planning for commercial projects may take from one to two years, while construction may last another two or three years.

Most major owners and developers have multi-year plans which will outline intended construction projects over the next five years. However, because of the sensitivity of all commercial projects to external factors such as land assembly and re-zoning, the forecasts are only accurate over about two years. The accuracy of the second year forecast is dependent on the amount of construction remaining to be done on multi-year projects. For many developers, about 50%-60% of their annual commercial spending will be in the form of commitments to ongoing projects. Sensitivity to outside factors also makes it difficult to establish start-up dates precisely.

Both developers and owner-builders maintain a project inventory for many areas in the province. The decisions to make use of specific commercial plans depend on the growth of the area and other factors such as the actions of competitors. In effect, no major commercial development will take place without a detailed market study by the developer or owner-builder.



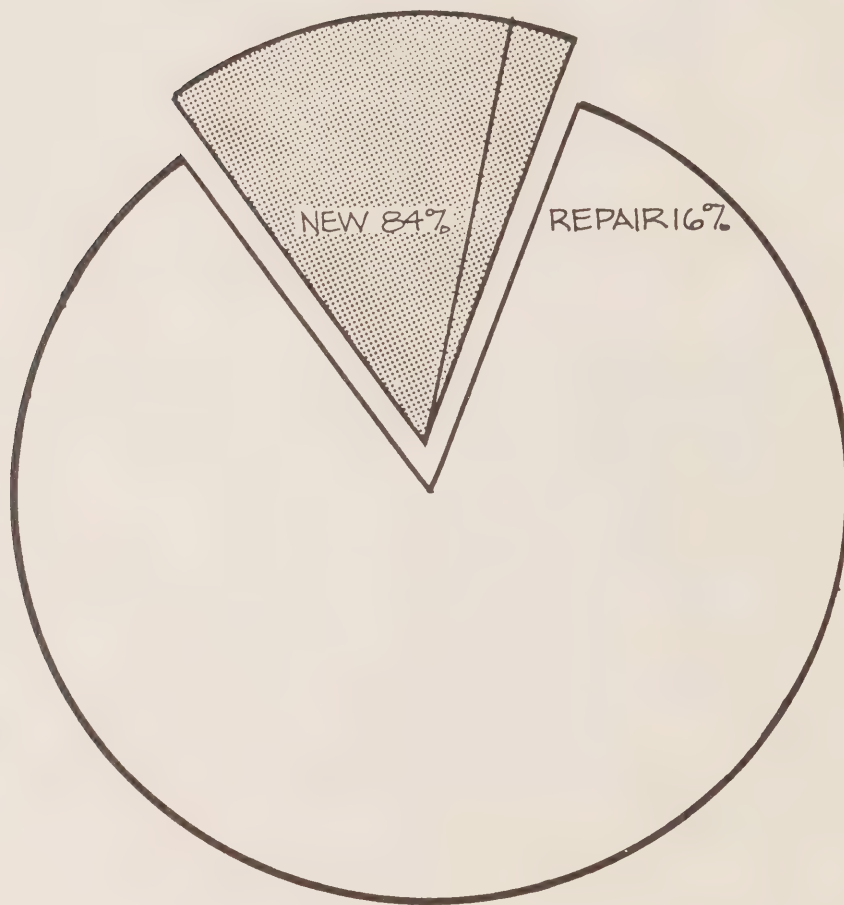
## Conclusions

- General plans should not be difficult to forecast.  
One and two-year forecasts should be accurate regarding scale and type of construction. Much lower accuracy will be possible on the timing of project starts. Except in the case of projects lasting longer than two years, multi-year forecasts will be of very low accuracy. Thus far, clients and developers have agreed to participate in forecasting studies, but are sceptical of the possible benefits to them.
- Because of the type of planning done, there is probably a low potential to re-schedule. All projects will have been researched in great detail prior to the decision to start building. This assessment will probably have examined optimal timing and factors such as materials and labour costs. As in the case of manufacturing facilities, once the go-ahead decision has been made, the client wants to complete building as soon as is possible. Particularly for commercial developments, project timing may be critical to gain competitive advantages.

## UTILITIES CONSTRUCTION

Construction expenditures by utilities clients account for 16% of the annual construction spending in Ontario. This sector is characterized by frequent large scale projects which run for several years - factors which are of great importance for the construction industry. Along with

**Utilities Construction \$997million**



**Exhibit 8.**



the construction of large, single projects, the utilities clients also carry out extensive repair and construction maintenance work to their existing facilities (Exhibit 8).

### Clients

The clients in this sector include Ontario Hydro, Consumer's Gas, Union Gas, Bell Canada, private broadcasters, railway and urban transit systems, and pipelines built by major oil companies. Although the number of major clients in this sector is small, most of them have province-wide jurisdiction and consequently construction work is carried on throughout the province. As an example, Ontario Hydro (accounting for about 60% of sector construction) has major generating station projects underway at Lennox, Nanticoke, Pickering and Bruce. In addition, major repair work is also done on the existing transmission and distribution system.

### Current Planning Practices

Planning practices in this sector vary according to the size of the client involved. The largest clients plan intentions for over ten years into the future, with very accurate plans for committed projects - some of which may last as long as eight years. Smaller clients plan only about two years in advance, with high accuracy for only one year in advance. This shorter range reflects the smaller scale of projects undertaken by the clients. Few of their projects last more than several months, while multi-year projects are typical of the larger clients.



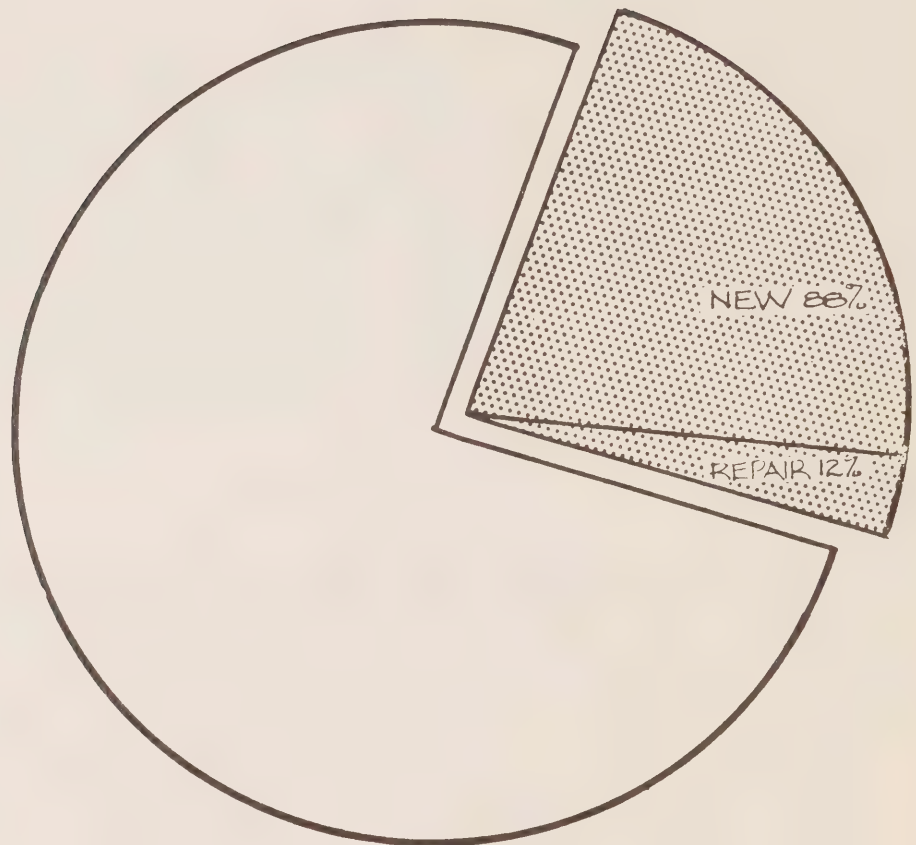
The large clients, such as Ontario Hydro, who employ their own construction force, can prepare plans detailing manpower requirements for all capital construction. Smaller clients, who contract out up to 80% of their work, do not plan in manpower terms.

For all clients, the accuracy of their start-up plans is greatly affected by external factors such as land acquisition, authorization for plants and transmission facilities, and the political impact of certain facilities (e.g. nuclear power plants). Because of these factors, clients cannot be very precise about exact start-up times. However, once all the external factors have been taken care of, all clients can estimate timing very accurately.

### Conclusions

- Forecasting for the utilities sector should be feasible. Although the smaller clients will only be able to forecast accurately for one year in advance, the concentration of clients, all of whom have province-wide jurisdiction, makes the collection of data feasible. Moreover, the prime importance of Ontario Hydro in this sector makes longer range forecasting possible. Once major, multi-year projects are underway, forecasts of future activity should be reasonably accurate. All clients who have been contacted have indicated their willingness to co-operate.

**Institutions and Government Construction     \$1,519million**



**Exhibit 9.**

- In spite of these factors, the potential to re-schedule is probably low. In the case of the very large generating projects, the engineering complexity and length of the project make re-scheduling very difficult, particularly once underway. For the smaller clients, there is little potential for re-scheduling because they are generally responding to changes in demand for their services. Also, the smaller clients use highly specialized contractors and portions of the labour force which are not used extensively by other sectors of the industry.

## INSTITUTIONS AND GOVERNMENT DEPARTMENTS

Institutional services and government departments are responsible for almost one quarter of all construction in Ontario (Exhibit 9). Construction in this sector encompasses a wide variety of building types. Major projects include: roads, schools, hospitals, university facilities, and offices for government enterprises and departments.

### Clients

The bulk of construction in this sector is under provincial government sponsorship. Approximate direct spending by various provincial agencies in 1972 was:

- |  |               |
|--|---------------|
| - Ministry of Transportation and<br>Communications | \$460 million |
| - Ontario Housing Corporation                      | \$160 million |





- Ministry of Education	\$185 million
- Ontario Water Resources Commission	\$ 70 million
- Ontario Hospital Services Commission	\$ 70 million
- Ministry of Colleges and Universities	\$ 65 million

In addition, these and other provincial agencies provided subsidies to municipal levels of government for local construction expenditures.

Annual federal government expenditures in Ontario total approximately \$150 million with the Department of Public Works accounting for about \$65 million of this amount. Other federal agencies with substantial construction budgets include the Ministry of Transportation, Defense Construction, Northern Affairs and the Solicitor General's department. Again, some federal agencies such as CMHC provide funds for provincially sponsored construction work.

All of these clients have province-wide jurisdiction, but centralized decision-making. This latter factor makes the task of actively surveying their construction plans far simpler. With few exceptions, the major activities of these clients will be centred around the key population centres.

#### Current Planning Practices

Over the last several years, Planning Programming and Budgeting Systems has been introduced in almost all federal and provincial agencies and departments. The advent of this system has formalized the need for multi-year plans ranging from three to five years. Consequently, all government departments routinely prepare capital and repair construction schedules for several



years into the future. These plans are generally in \$ terms rather than in manpower terms, and reflect department intentions rather than firm plans.

All agencies can give accurate one-year forecasts, and to the extent that projects carry over into subsequent years, forecasts for those years will also be accurate. Most agencies also prepare three year plans in support of annual budgets; some longer term projects also have five year plans.

Longer range forecasts are less accurate due to the sensitivity of this sector to changes in political and economic conditions. Public sector decision-making reflects factors which deviate from those which influence private capital investment plans. These factors normally affect only a few projects each year and do not materially affect the total scale of construction that an agency undertakes.

### Conclusions

- Forecasts over one to two years appear very feasible. Planning practices and the client structure of this sector combine to make short-run forecasts easy to obtain. Over a longer time range, this sector is subject to overall changes in priorities but such changes do not normally take place over as short a time span as three to five years.



- Government clients appear to have the greatest ability to reschedule their construction work. Many factors make rescheduling feasible for most government projects:
  - a) Few institutional or government projects have strict completion deadlines to meet. Only in cases such as school and university facilities are completion times of critical importance. Also, many projects last less than one year, thus minimizing the scheduling problems common to multi-year projects.
  - b) Generally, the scale of projects is small enough to permit re-scheduling. Capital expenditure programs are frequently small enough to permit different agencies to run simultaneous projects in the same region without necessarily overloading the local labour market. The shorter the project, the more immediate the effects on the local market.
  - c) A "shelf" of projects which includes many of the basic construction types and can be activated at almost any time is maintained by some agencies. This availability could make construction decisions sensitive to very specific underemployed labour units throughout the province, because these agencies have province-wide jurisdiction.
  - d) Finally, both the federal and provincial governments have traditionally employed construction spending as a counter-cyclical fiscal tool. Given better advance

Housing

\$2,456 million

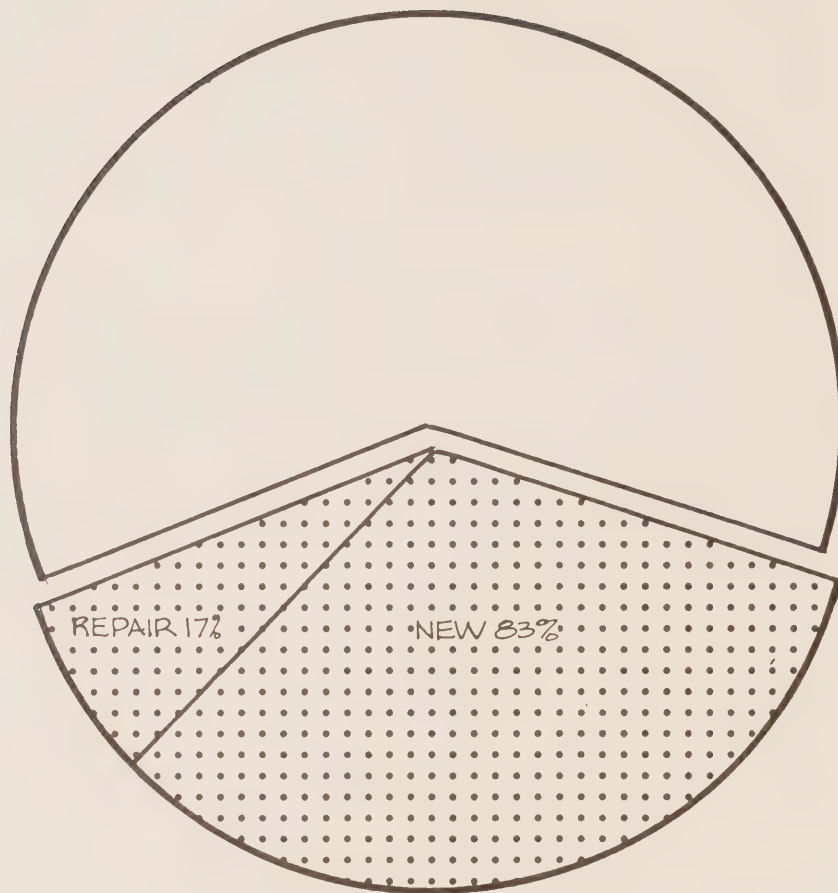


Exhibit 10.



information on area requirements, all levels of government should be able to target construction allocations to specific regional requirements. Although government agencies must be conscious of minimizing construction costs, decisions are not based on the profit motives of the private sector. Both the timing and nature of construction projects reflect considerations of the overall effects of spending decisions on local markets, on employment and on other social factors.

#### HOUSING CONSTRUCTION

Housing construction is the largest single sector in the Ontario construction industry, accounting for 39% of total construction spending (Exhibit 10). This important segment is one of the most volatile and difficult to forecast. Even on a provincial basis, annual cyclical swings can be as much as 30% which, while proportionately below those in some other sectors, are more important because of the size of the residential sector. However, there appears to be little connection between the labour force in this and other sectors. Only a few centres such as Windsor and Thunder Bay have unionized residential labour forces. While certain trades are unionized in other cities, the movement of men between residential and other sectors is not common.

#### Clients

Clients in this sector vary greatly in the size and scope of their operations, and in the types of housing they build.



- Large developers: There is a relatively small group of companies whose individual production can be over 500 units or \$10 million each in any one year. They have tended to build primarily apartments, or large single family developments. Many, such as Cadillac, Greenwin, Markborough, Meridian, Costains and Don Mills are mainly Toronto-based, although some do operate in other centres. Others, such as Campeau, Riverside and Headway are active in other areas of the province. Some developers also engage in commercial construction work.
- Small builders: The bulk of housing construction in the province is done by a large number of small companies who each build less than 50 to 100 units per year. They are strictly local in operation and concentrate on single family dwellings.
- Ontario Housing Corporation: The only public agency building substantial numbers of units in the province is O.H.C. This agency is the largest single client in the housing sector, and accounted for over \$60 million of construction in 1972. All of this is contracted through private builders with original funding coming to O.H.C. primarily from Central Mortgage and Housing Corporation, the federal government's housing agency.

#### Current Planning Practices

While some companies in this sector prepare plans, there are a number of factors affecting the accuracy of those



plans.. Large developers have reasonably accurate one and two year plans and less accurate statements of intentions beyond that point. Whether these plans will be realized, however, depends on future market conditions, such as money supply, interest rates and buyer attitudes. A particularly important factor is whether or not serviced land is available. This depends on the progress of land holdings through the numerous stages in the re-zoning and subdivision approvals process, the timing of which is difficult to predict.

Small builders tend to be more entrepreneurial and engage in little formal construction planning. Finally, O.H.C. is not fully in command of its construction program, since it essentially responds to requests for housing from municipalities and is somewhat constrained by the supply of funds from C.M.H.C. which are allocated annually. Therefore, while O.H.C.'s plans involving approved projects are relatively firm, projections of more than two years are subject to considerable error.

### Conclusions

- Forecasts based on company plans will be incomplete and subject to error. While large companies and O.H.C. have plans and have expressed willingness to co-operate in a forecasting system, they represent only a modest proportion of the residential industry. Thus, the lack of forecasts by small builders would make any survey of intentions incomplete. Even for companies with plans,





the relatively short time taken to build individual housing projects means that more than 50% of each year's forecast is devoted to new starts, which are subject to changes in plans. Developers will only build when and where there is a suitable market; if circumstances change, so will construction plans or schedules. Developments are also sensitive to both political and economic changes. Political decisions can frustrate plans and changes in interest rates can make projects unprofitable.

- Potential for rescheduling is low. Labour supply is not a major factor affecting scheduling decisions and builders do not view a system of regional construction or labour forecasts as being of great benefit to them.
- However, other forecasting approaches should be explored in relation to broader planning for the residential sector. It is probable that a more accurate forecast of residential construction activity could be prepared by supplementing intentions of larger developers with a more analytical approach, taking into account other factors affecting production. The number of units constructed in an area is affected by population pressures (household formation, undoubling, etc.), the supply of serviced land and other less predictable factors such as the supply of mortgage funds, interest rates and general buyer psychology. Population forecasts are available and information on land supply and the progress of processing subdivision applications is



generally available from municipalities or the provincial government. These could be combined with company plans to produce estimates of residential construction in each region.

Apart from this study, a number of other studies are examining the housing problems of Ontario. It is possible that, out of the work of such organizations as the Advisory Task Force on Housing Policy and the Ontario Housing Advisory Committee, a more concerted effort will be made to understand the housing needs of various parts of the province, and to facilitate the planning and scheduling of future development. Forecasts of actual construction activity could be an important input to this work.



### 3. PROPOSED FORECASTING REGIONS

Having examined the feasibility of forecasting construction in each of the five main sectors of the industry, the second part of our study has been concerned with determining the number and boundaries of the regions for which forecasts are to be prepared. To help define the appropriate regions, we have studied the nature of local labour and construction markets across the province through discussions with labour, contractor and owner representatives. We have also reviewed present regional boundaries established by various regulatory and planning agencies concerned with provincial planning and the construction industry.

In this chapter we first outline the criteria upon which our recommended regions are based. We then review the various other regional jurisdictions affecting the industry and present the nine proposed forecasting regions.

#### CRITERIA

Any proposed forecasting regions must satisfy criteria which will make them acceptable to the various groups in the construction industry. Three main criteria must be satisfied to ensure the participation of all clients and the usefulness of any forecast information.

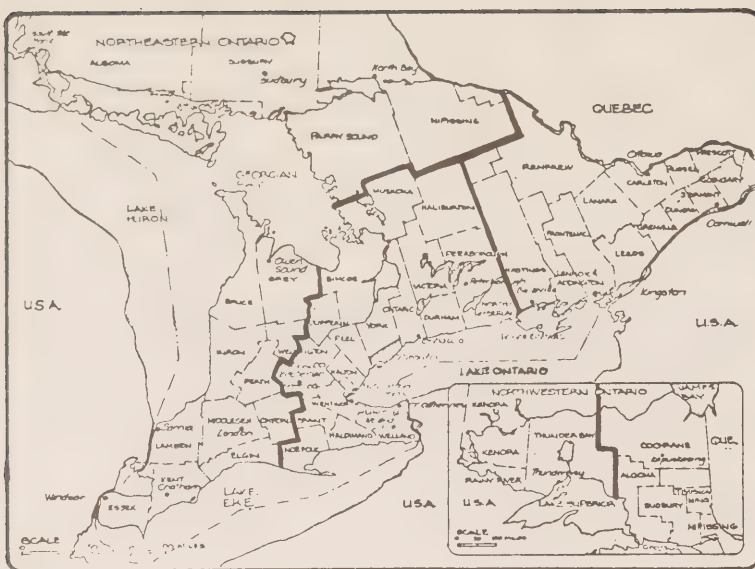




1. The regions must represent normal work areas for most construction trades. "Normal work area" is the area which most trades regard as a common region in which they will seek work. Men will probably maintain their homes in one city, even if it is necessary to commute to another to work.
2. Regions must be large enough to conceal the identity of participating owner-clients. The foundation of a successful forecasting system must be good co-operation from the large owner-clients. If regions are too small, then a single, large client could dominate in some areas. A client's plans could be clearly identified from the regional forecast thus destroying the confidentiality of the system.
3. The number of regions must not complicate the administration of the forecasting system. Too many regions could create complex reporting or procedural problems, as well as not concealing the identity of major clients. Too few regions would mean that the resulting forecasts would not be meaningful to local labour markets.

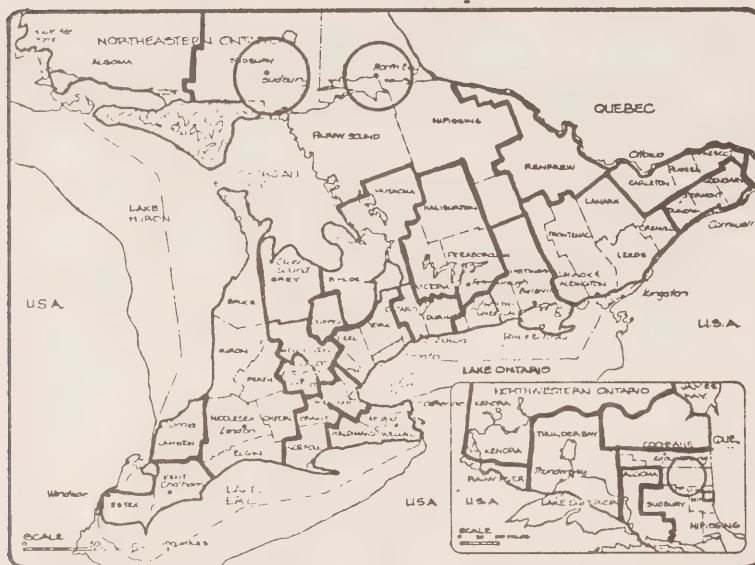
#### OTHER REGIONAL DIVISIONS

We reviewed several existing regional divisions, used by the provincial government and the construction industry, to determine their suitability as forecasting regions:



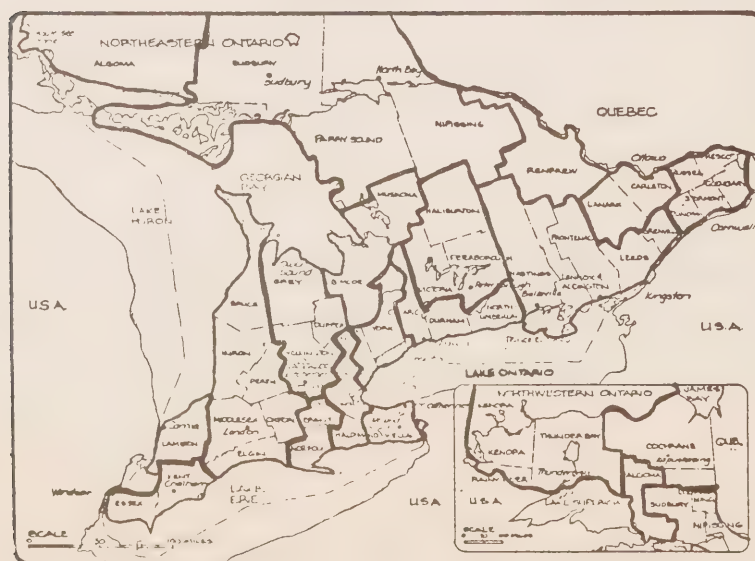
## New Provincial Government Planning Regions

Exhibit 11.



## Ontario Labour Relations Board Districts

Exhibit 12.



## Building and Construction Trades Council Districts

Exhibit 13

- Provincial Government Planning Regions. The Province of Ontario is currently switching over from its former ten planning regions to five (Exhibit 11). These divisions form the boundaries for planning purposes, with the central region stretching from Lake Erie and the Niagara Peninsula to Georgian Bay on the north and Belleville on the east, thus including a large proportion of the province's population. The provincial government is also considering a recommendation to standardize the administrative regions for various Ministries around the five planning regions. Here it is felt that, because of the amount of government activity in the large central region, the planning region centred on Toronto should be split into an east and west half, making six administrative regions.

While recognizing the importance of these regions and the obvious connection between construction forecasting and planning, complete acceptance of these regions was rejected because both the central and the western Ontario regions were too large and did not reflect local labour and construction markets. In particular the central region would not take into account the large and quite separate Toronto and Hamilton-Niagara markets.

- Provincial Labour Regional Groupings. For labour purposes, there are two sets of divisions within the province. The Ontario Labour Relations Board recognizes 32 construction industry areas for use in certification (Exhibit 12). The organized construction unions have eighteen Building and Construction Trades Councils representing the local trades (Exhibit 13). As possible forecasting regions,



these divisions are too small to conceal the identity of major clients in several areas. Also, in many instances, the normal work areas of the labour force do not coincide with these regions.

#### PROPOSED FORECASTING REGIONS

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To establish reasonable and practical boundaries for the proposed forecasting regions, we have conducted a province-wide survey of the various client groups in the industry. To understand the perspective of labour, we have, over the last two months, visited most of the Building and Construction Trades Councils in Ontario. Similarly, we have also interviewed most of the construction associations represented in the province. Where possible, we also contacted major clients in the immediate area.

In each instance, we discussed the needs of the various groups and we have attempted to incorporate their advice in the creation of forecasting regions. Also, we kept in mind the existence of other regional divisions and matched these factors with the three basic criteria for regions.

We found that there were accepted working territories for most contractors and unions. For most of the regions, boundaries were easily determined. While some large general contractors operate throughout the province, most local general contractors and unions have developed mutually accepted



## Proposed Forecasting Regions

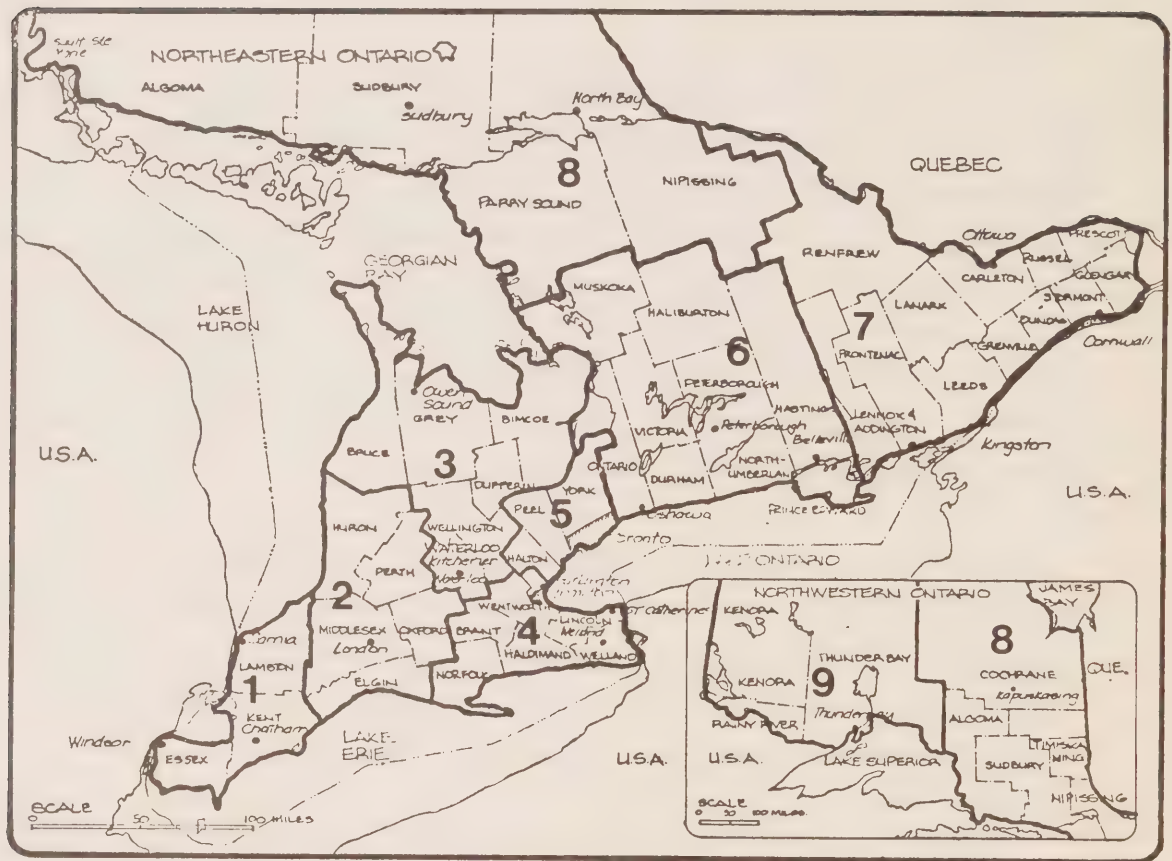


Exhibit 14.



territories which are maintained with only infrequent intrusions by outside units.

Taking all these elements into account, we recommend the use of 9 construction forecasting regions for the proposed system (Exhibit 14).

1. Western: The three counties at the southwestern end of Ontario form a natural construction region, with most work in Windsor and Sarnia. Natural labour movement is between these two cities, and very little movement occurs to the London area.
2. Midwestern: This region covers a 5 county area, with most construction activity centred in London, St. Thomas and Woodstock. The only county in question in this area is Perth, which has work done by contractors and unions based both in London and Kitchener-Waterloo. Because of Ontario Labour Relations Board groupings, we have included Perth County in this region.
3. Kitchener-Georgian Bay: This 6 county region includes Kitchener-Waterloo, Guelph, Stratford, Owen Sound, Douglas Point, Port Elgin and Barrie. Two counties in this region are serviced by contractors and unions from other regions. Bruce County is grouped with the London Region by the OLRB. However, because construction workers from the Kitchener-Waterloo area work in Bruce County, we have it in this region. In Simcoe County, construction work is handled by the Central Ontario



Region and Kitchener-Waterloo contractors. Because of the extreme concentration of construction work in the Central Region, we have included Simcoe with Kitchener-Waterloo to minimize the overall size of the Central Region.

4. Niagara: The Niagara region encompasses Hamilton-Burlington, Brantford, Nanticoke, Port Dover, St. Catharines, Niagara Falls and Welland. Although the six counties of this region form a natural unit, contractors and unions from Kitchener-Waterloo also operate in Brant County. On balance, the stronger labour link is probably to the east and Brant County has been included with this region.
5. Central Ontario: This region has the greatest concentration of clients and the largest \$ volume of construction spending in the province. Although it is geographically the smallest of the proposed forecasting regions, over 50% of all construction spending occurs in its area. Toronto, and the surrounding cities of Mississauga, Oakville, Brampton, and Georgetown are the key construction centers. Because of the concentration of clients and work, this area has been kept to the smallest practical geographical size. The Oshawa-Whitby and Burlington-Hamilton areas have intentionally been kept separate from this region.
6. Lake Ontario: The Lake Ontario Region covers the cities of Oshawa, Whitby, Pickering, Cobourg, Trenton, Belleville



and Peterborough. Although this is a large area geographically, most construction activity is concentrated relatively close to the lake. As noted, Oshawa and Whitby have intentionally been cut off from the Central Region. Both contractors and unions feel that there is a distinct separation between their operations and those of Toronto-based groups. At the eastern end of this sector, Hastings County is a natural division point, because the Trenton and Belleville construction markets are isolated from those in Kingston.

7. Eastern Ontario: This region covers a large number of counties, and a number of important construction centres: Kingston, Ottawa, Brockville, Cornwall, Gananoque, Smith Falls and Pembroke. Lennox and Addington County is included in this region because of the strong links between this county and the Kingston labour market.
8. Northeastern Ontario: Both of the regions in Northern Ontario occupy far larger geographical areas than the other regions in the province. However, construction areas are dispersed and there are relatively few clients in either area. The District of Cochrane is affected by the construction operations of both the Sudbury and Thunder Bay areas. However, it is included in this area because of the number of labour agreements linking Timmins and Sudbury. Kapuskasing, which might more naturally be linked to Thunder Bay as well as Sault Ste. Marie, is not included in the Northwestern Region. This has been done to maintain normal district divisions, rather than splitting districts, and to conform to the





new Provincial Government Planning and Administrative regions.

9. Northwestern Ontario: This region also includes very large land areas with only two major population centres: Kenora and Thunder Bay. Contractors and unions from Thunder Bay operate in the Districts of Algoma and Cochrane and official control of the Districts has not been firmly established by the local construction groups. However, the major connections based on labour agreements for both Algoma and Cochrane, are with Sault Ste. Marie and Sudbury and not to the west.

\* \* \* \* \*

In conclusion, we believe that the above nine regions reflect the logical construction markets in the province from the point of view of both labour and contractors. They are also large enough to protect the identity of the major clients who would be submitting their plans on a confidential basis.



## 4. NEXT STEPS

Our work on the first phase has shown that the proposed approach is feasible, although certain sectors of the industry should be able to be forecast more accurately than others. The work has also indicated that the province should be divided into nine regions for forecasting purposes. A decision must now be taken as to whether to proceed into the succeeding phases, as originally planned.

To aid this decision, we outline below our proposed approach to the remaining phases of the work.

### PHASE 2: DEVELOPING THE DETAILED APPROACH

The objectives of this phase will be threefold:

1. To prepare the detailed technical approach to the forecasting system including survey procedures, analysis and methods of producing and distributing the forecasts.
2. To recommend where responsibility for the system should be placed, and the form and cost of the organization needed.
3. To recommend the region or regions where the approach should be tested on a pilot project basis.



Thus, at the end of this phase the groundwork will have been completed to begin preparing forecasts in one or more regions. To reach this point, in this phase, we will:

1. Develop the detailed survey procedures to be used for collecting data: Here we will review in detail approaches to similar surveys by Statistics Canada and others in preparing the recommended approach. The approach will include the forms to be used, distribution and collection procedures, methods of liaison with the organizations supplying information, and approaches to maintaining confidentiality of the data once supplied.
2. Prepare factors for converting dollar forecasts to labour requirements by trade: A difficult yet important aspect of the analysis of the results of the survey will be the methods of conversion. It is expected that few clients will be able to prepare their forecasts in terms of the labour needed for the planned construction. Instead, most will supply budget estimates and the types of facility (office building, road, docks etc.). Thus a list of the various categories of construction must be prepared and factors established for converting dollar estimates to labour requirements for each skill category. To do this we plan to consult contractors, cost consultants and other organizations knowledgeable about the labour input to various types of construction. We also plan to draw on work done to date by the Department of Manpower and Immigration on conversion factors for road construction.





3. Outline the detailed analytical procedures to be used in preparing forecasts: Using the information provided by the clients and the conversion factors, methods of preparing the forecasts will be developed, including step-by-step calculation procedures and whether or not computer-assisted approaches are needed.
4. Examine alternatives and recommend the most appropriate form of organization: Clearly there are a number of possible approaches to a permanent organization for preparing forecasts. There are two main questions to be resolved: What type of agency should be used (government, non-profit or other) and what form of organization and staffing is needed to carry out the job? In the former, it will be necessary to examine the alternatives in terms of clients' willingness to supply information, funding sources, current responsibilities of related agencies and other considerations. Once the type of agency is resolved, then the functions, form and organization and staffing can be determined. These are likely to be difficult issues to resolve and will require careful analysis of the alternatives together with inputs from Panel members and others with an interest in the result.
5. Recommend the region(s) to be used for pilot projects: It will be necessary to review the characteristics of the recommended regions in the light of the procedures and organizational approach for the forecasting system. From this the region or regions most closely approximating the typical problems to be encountered for the system



as a whole will be selected for pilot studies aimed at testing and refining the system and preparing the first forecasts.

We estimate that this Phase will take from two to two and one half months to complete. At its conclusion, we will prepare a report documenting the forecasting process as developed and the organizational and staffing recommendations, together with a profile of the region(s) where the system should be tried on a pilot basis. Depending on the progress towards setting up the permanent organization and the Panel's decision on when the pilot project should begin, our work could be complete at the end of this Phase, or we could be involved to varying degrees in the following stages:

### PHASE 3: CARRYING OUT PILOT PROJECTS TO TEST AND REFINE

Trial forecasts in one or two representative regions would test the procedures developed under practical working conditions, indicate the costs associated with preparing forecasts and show where further modifications or refinements would be needed, if any, before introducing the system on a province-wide basis. We would estimate that this Phase would take two to three months to complete after which time the results could be published for the information of those concerned with construction in the region.

### PHASE 4: EVALUATING OPPORTUNITIES FOR REDUCING CYCLES

While the forecasts will provide the information upon which clients could alter their construction plans, our work



in Phase 1 has shown that the plans of some types of clients are more amenable to re-scheduling than others. To some, new facilities are needed at certain times in the future and the construction costs are of secondary importance. To them, re-scheduling would not make economic sense unless forms of incentives such as tax breaks were made available. On the other hand, other types of clients - notably government - should be more susceptible to re-scheduling.

This Phase will examine experience to date with attempts to re-schedule construction activity and the methods used, both in Canada and elsewhere. The underlying causes of cyclical unemployment in Ontario will be determined and the overall costs and benefits of re-scheduling estimated. From this it would be possible to examine the kinds of actions or incentives needed to influence the timing of private investment and the approaches which could be used within government to co-ordinate the timing of its construction demand both internally and with respect to the private sector. Having identified the approaches which could be used, the roles, responsibilities and relationships for influencing the desired changes could then be determined.

We would anticipate that this Phase will take about two to three months to complete, depending on the depth of the cost/benefit analysis prepared. The work would be done concurrently with the pilot projects in Phase 3. Thus, at the end of these Phases, work would be complete, not only to begin forecasting on a province-wide basis but also to take the necessary steps to reduce cyclical unemployment in the industry.





\* \* \* \* \*

We believe that the above approach will provide all the necessary procedures and approaches for the establishment of on-going forecasts in all regions of the province. Our timing estimates would indicate that, provided there are no delays during the course of this work, the work outlined above should be complete by the end of this year.



## 5. APPENDIX



## ORGANIZATION CONTACT LIST

### CONTACT

#### Industry

Bechtel Canada Limited  
Algoma Steel (O/C.C)  
Kimberly Clark (O/C.C)  
Polymer Canada (O/C.C)  
Manufacturers Life  
Noranda Mines  
Lake Ontario Cement  
Comstock International Ltd.  
Shell Oil  
Stelco  
Costain Homes  
CanaData  
Consumers Gas  
Robert Simpson Co. Ltd.  
Campeau Construction  
Sun Life Insurance Co.  
Dominion Stores  
London Life Insurance Co.  
Y & R Properties Ltd.  
Headway Corporation, Ltd.  
V. K. Mason  
Riverside Construction  
Canadian Man. Assoc.  
Meridian  
Fairview  
Heathcliffe  
Cadillac  
Pep  
Consolidated Building Corporation

#### Associations

O.F.C.A.  
Can. Man. Assoc.  
Const. Lab. Rel. Assoc. Ontario  
Sault Ste. Marie Const. Assoc.





H.U.D.A.C.  
Canadian Construction Assoc.  
Sarnia Construction Assoc.  
London & District Const. Assoc.  
Toronto Construction Assoc.  
Ottawa Construction Assoc.  
Kitchener-Waterloo Const. Assoc.  
Kingston Construction Assoc.  
Thunder Bay Const. Assoc.  
Oshawa Const. Assoc.  
Windsor Const. Assoc.  
Hamilton Const. Assoc.  
Sudbury Const. Assoc.  
Economic Council of Canada

#### Labour

Hamilton Building & Const. Trades Council  
London Bldg. & Const. T.C.  
Ottawa Bldg. & Const. T.C.  
Sarnia Bldg. & Const. T.C.  
Sault Ste. Marie Bldg. & Const. T.C.  
Toronto Bldg. & Const. T.C.  
Provincial Bldg. & Trades Council  
Kingston Bldg. & Const. T.C.  
Thunder Bay Bldg. & Const. T.C.  
Oshawa Bldg. & Const. T.C.  
Windsor Bldg. & Const. T.C.  
Sudbury Bldg. & Const. T.C.

#### Government

Management Board  
Ministry of Government Services  
Treasury and Economics (Regional Planning)  
Ministry of Labour (Research)  
Statistics Canada (Tor.)  
Ontario Hydro  
Manpower & Immigration (Tor.)  
Government of Canada D.P.W.  
Ontario Water Resources Comm.  
Ontario Hospital Services Comm.  
Ministry of Treasury Economics & Intergovernmental  
Affairs (Land Approvals)  
Ontario Housing Advisory Cttee.  
Statistics Canada (Ottawa)  
DITC (Ottawa)  
Treasury Board (Ottawa)  
Ministry of Colleges and Univer.  
Manpower & Immigration (Ottawa)  
Ministry of Transportation & Communications  
City of Windsor  
Department of Public Works, City of Toronto  
Department of Public Works, (Ottawa)







